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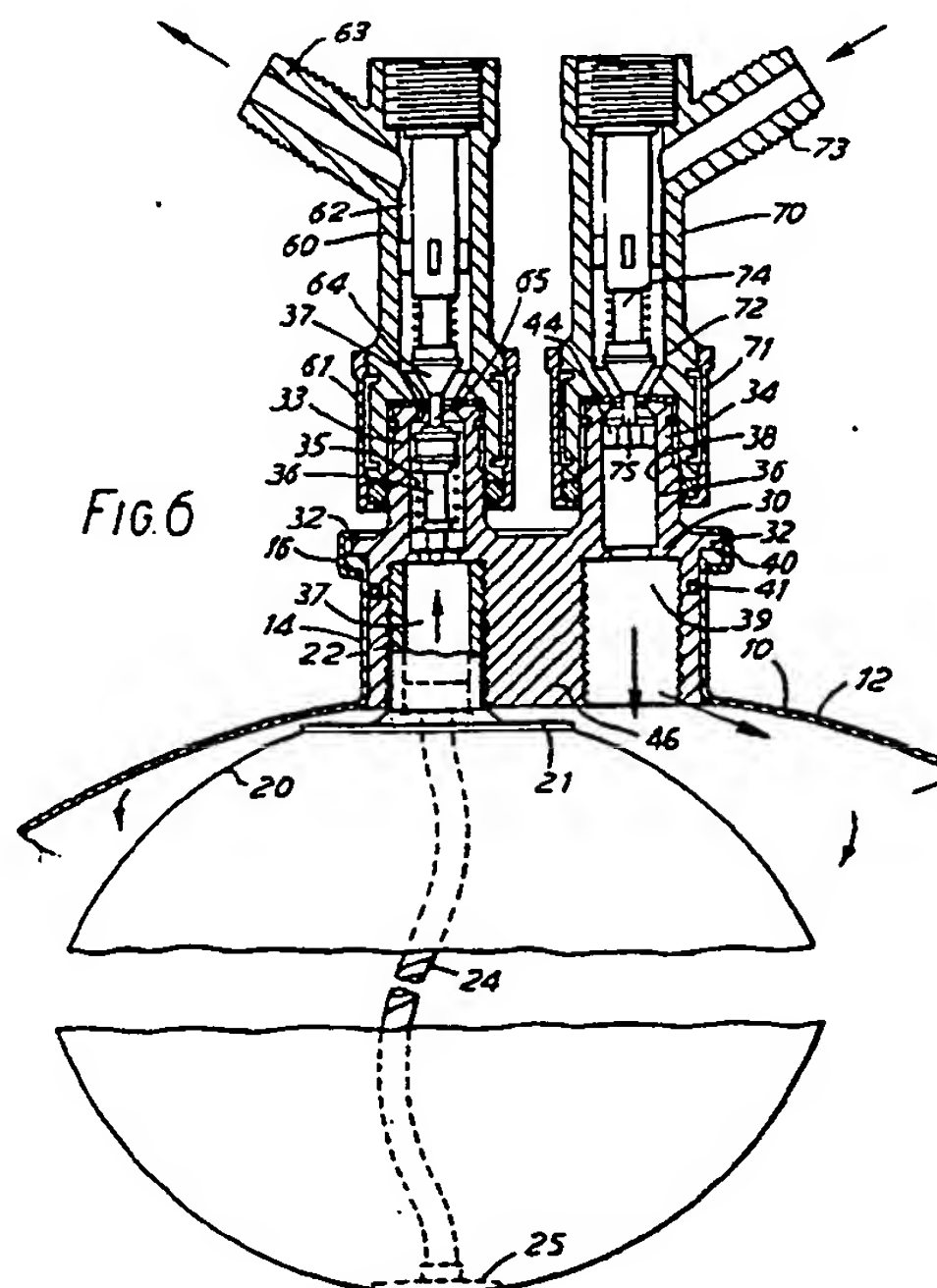
(71) Applicant: **LAMBRECHTS N.V.**
Gansbroekstraat 25
B-2658 Ruisbroek-Puurs(BE)

(72) Inventor: **Beyens, Jozef Hubert Marie**
Edegemsestraat 27
B-2540 Hove, Antwerp(BE)

(74) Representative: **Brown, David Alan et al**
MATHYS & SQUIRE 10 Fleet Street
London EC4Y 1AY(GB)

(54) Container for liquids.

(57) A container for transport, storage and dispensing of beverages, such as beer, comprises an outer container (12) of plastics such as PET, and an inner bag (20) of flexible material, such as layered poethylene. The inner bag (20) is connected to an outlet (33) which can receive a coupler (60) connecting the outlet to a dispensing tap (80), this connection being similar to a conventional quick-fit coupler. An inlet (34), which can receive a coupler (70), enables pressurised gas or air to be supplied to the space between the outer container (12) and inner bag (20) to apply pressure to the bag to expel beverage from the bag through the outlet (33). The bag (20) is filled with beverage through the outlet (33), which has a non-return valve (36, 37) to close the outlet, after filling, during transport of the container to the dispensing location. The inlet (34) provides a permanently open passage which, after the container has been emptied and the gas or air line disconnected, allows any remaining pressure to escape, or removing any danger which might arise with a pressurised container, particularly if the container is discarded. The container is relatively light-weight and inexpensive, and can be filled and used to dispense beverage without the beverage coming into contact with air or pressurising gas at any stage until it leaves the dispensing tap.



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having a flange 21 to which the bag is welded. The tube 22 enables the bag to be connected to the closure 30, as described below. A flexible member 24 is secured at one end to the tube 22 and at the other end to a plate 25 fixed to the bottom of the bag 20. The member 24 serves to maintain an open passage to the mouth of the bag and prevent the material of the upper part of the bag from collapsing over the mouth of the tube 22 under the applied gas pressure when the bag is partially emptied. The member 25 is in the form of a helically-wound strip of flexible plastics material of a kind approved for contact with beverages, though the strip could take other forms.

The closure 30 is a plastics moulding having a body 31 shaped to fit into the neck 14 of the outer container 10. An outwardly extending flange 32 on the body 31 fits against the rim 16 of the outer container 10. The closure 30 is fixed to the outer container 10 by means of a metal ring 40 crimped over the rim 16 and flange 32. The body 31 has two bosses 33 and 34, which in use receive respective couplers 60 and 70 (Figure 6). The bosses have bores 35 and 38, which communicate with respective counterbores 37 and 39 extending through the body 31 of the closure. The tube 22 at the mouth of the bag 20 is a push fit into the counterbore 37 in boss 33, and may be bonded to it using a suitable adhesive. An O-ring 41 is fitted between the closure 30 and the neck 14 of the outer container 10, to prevent leakage of the pressurising gas or air.

The bore 35 in the boss 33 contains a spring-loaded valve member 36 which is normally held against a valve seat 42, to close the valve, as shown in Figure 2, but is moved away from the valve seat when the coupler 60 is connected to the boss 33, as described below.

The bore 38 in the boss 34 is empty except for a member 44, which serves to open the valve in coupler 70 when it is connected to the boss 34, as described below. The member 44 is perforated, so that the bore 38 provides a permanently open passage through boss 34. The member 44 may, for example, be a spider, as shown in Figure 5, which is push-fitted into the bore 38.

The boss 33 and the coupler 60 may be similar to the male and female parts of a conventional quick-fit coupler, such as is used to connect a dispensing line to the outlet valve of a keg. Thus the coupler 60 includes a spring-loaded locking sleeve 61 by means of which it is releasably connected to the boss 33. The coupler 60 has a bore 62 which communicates with bore 35 in the boss 33 and with a nozzle 63. The nozzle 63 can be connected to an inlet line for filling the container and, subsequently, to an outlet line 66. The bore 62 contains a normally closed valve 64. The valve

has an actuating pin 65, which when the coupler 60 is connected to the boss 33, engages the valve member 36 to lift the valve members 36 and 64 from their seats.

The boss 34 is similarly shaped to receive the coupler 70, which is releasably held in position by a locking sleeve 71. The coupler 70 has a bore 72 communicating with the bore 38 and with a nozzle 73, which can be connected to a source of pressurising gas or air. The bore 72 contains a normally closed valve 74 having an actuating pin 75 which, when the coupler 70 is connected to the boss 34, engages the member 44 to lift the valve member 74 from its seat.

The body 31 of closure 30 has ribs 46 which extend downwards to the level of the lower end of neck 14 of the outer container 12. The ribs prevent the upper part of the flexible bag 20 from being forced upwards into the neck 14 when the bag is filled.

In use, to fill the container, depending on the filling pressure of the beverage, a gas or air line is first connected to the boss 34 to produce a counterpressure in the space between the bag 20 and the outer container 10. A beverage supply line is then connected to the boss 33. The gas or air counterpressure is adjusted so as to be slightly lower than the pressure of the beverage supply line, so that the beverage flows into the bag 20 at a controlled rate, thus reducing to a minimum the turbulence and foaming of the beverage as the container is filled. After filling, the beverage supply line and the gas or air line are disconnected, and the valve 36 automatically closes. The container is then ready for transport to the customer.

To dispense beverage from the container, a dispensing line 66 is connected to the boss 33 through a coupler 60, and a gas line 78 is connected to boss 34 through a coupler 70. The gas line 78 may be connected, as shown in Figure 7, to a source 82 of pressurised carbon dioxide, for example as used in conventional keg dispensing systems. The dispensing line 66 may be connected to a conventional dispensing tap 80. The gas entering the space between the outer container 10 and the bag 20 applies pressure to the bag as shown by the arrows in the drawings, and forces the contents of the bag to flow out through the dispensing line 66 when the dispensing tap 80 is open. The pressurised driving gas or air between the bag 20 and the outer container 12 will maintain the pressure on the bag, ensuring that at all stages of dispensing a pressure is maintained on the beverage itself, which is often necessary to preserve the character and flavour of the beverage.

It will be appreciated that, in filling the container the beverage does not come into contact with the air. In dispensing beverage from the con-

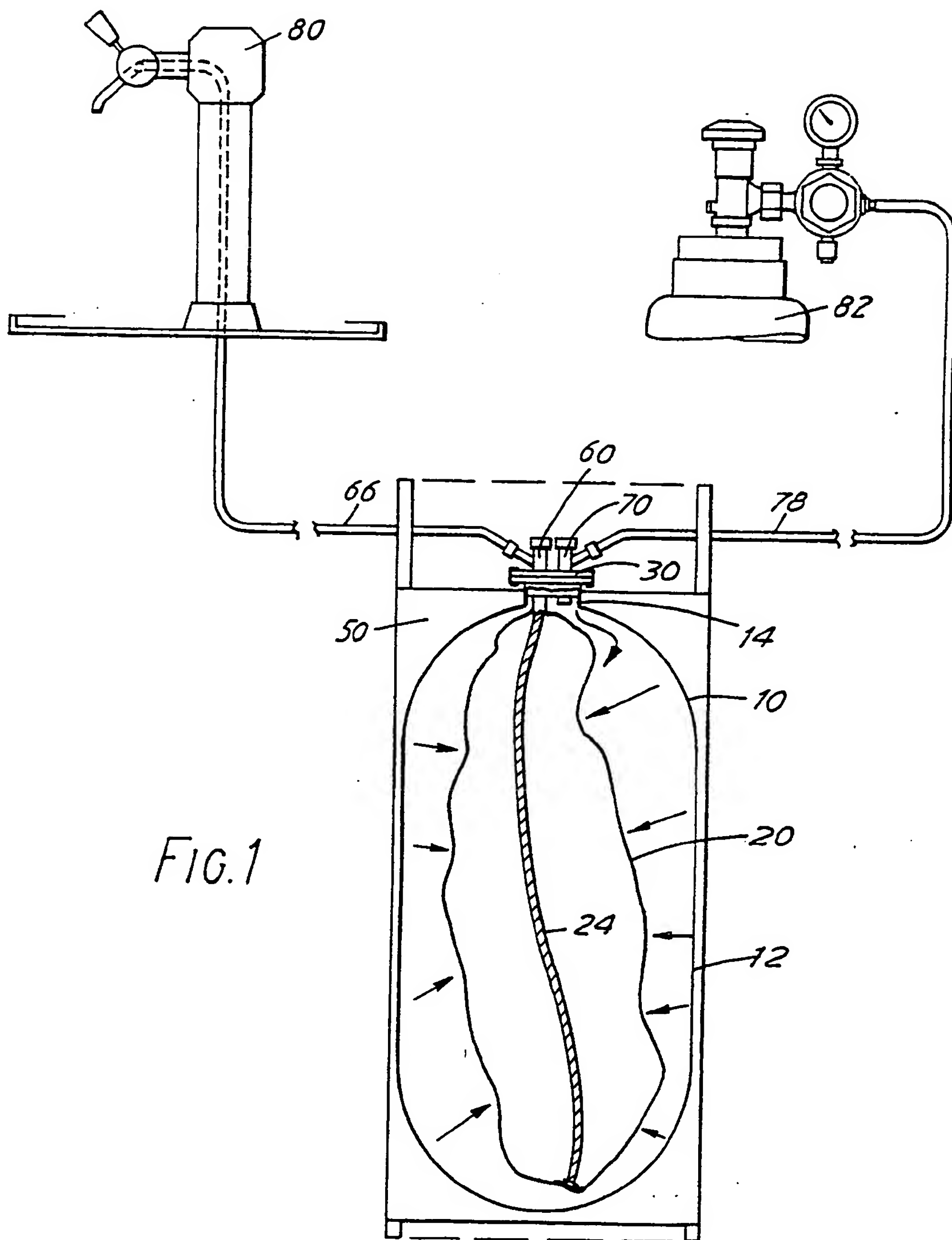


FIG. 1

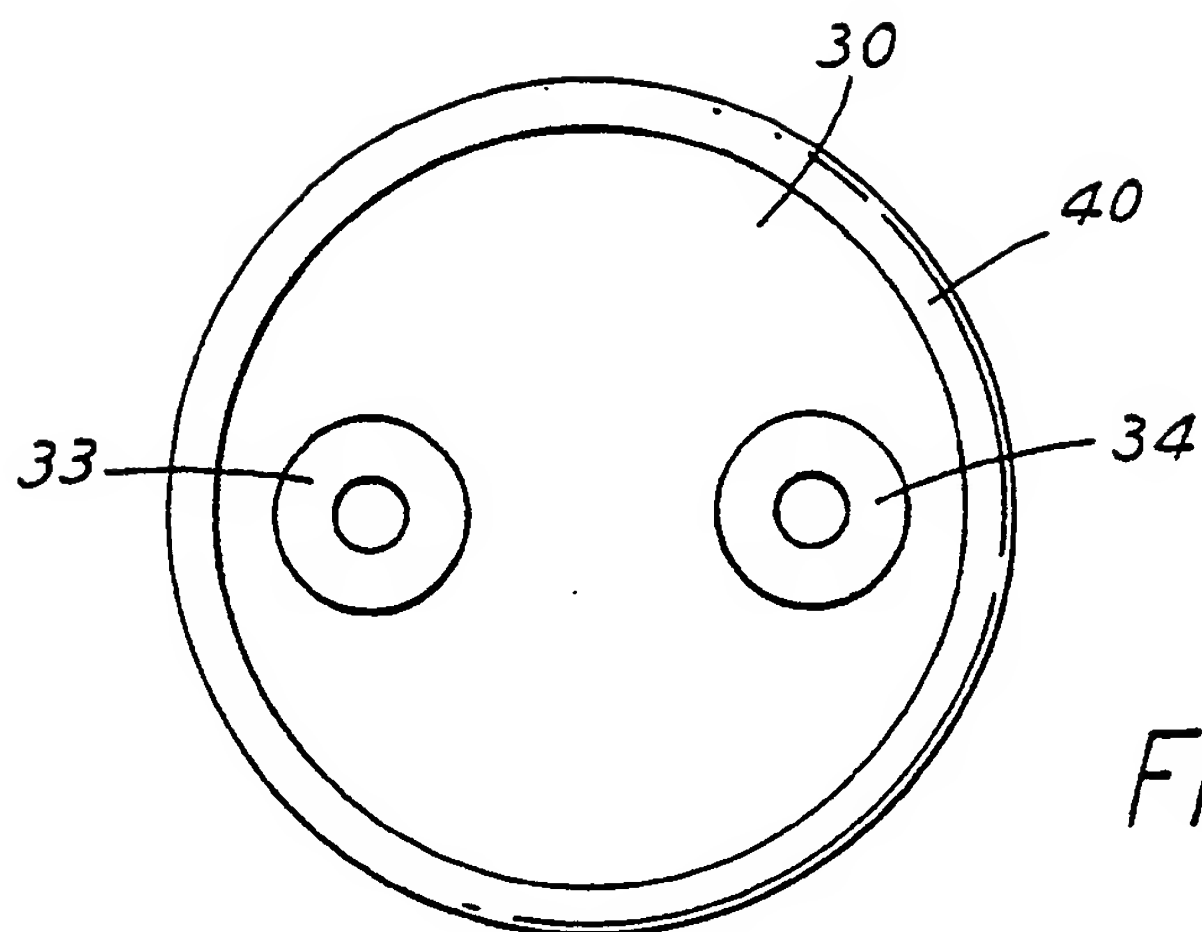


FIG. 3

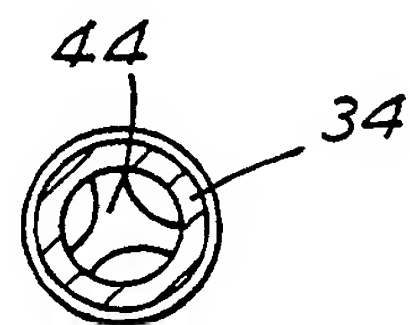


FIG. 4

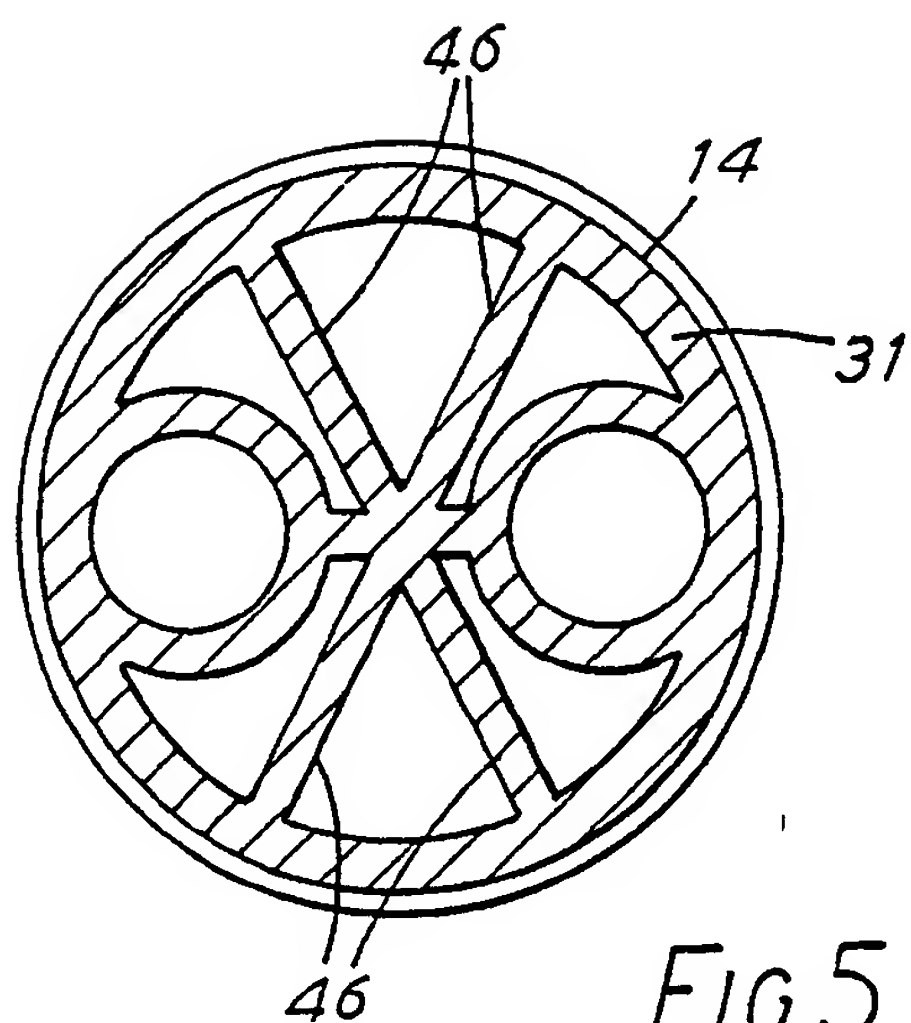


FIG. 5



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EUROPEAN SEARCH REPORT

Application Number

EP 90 30 2840

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-1 324 104 (CHADBURNS LTD) * Page 1, right-hand column, lines 3-15; page 2, left-hand column, lines 10-51; page 3, left-hand column, lines 25-46; figures 4,5,6 *	1-2	B 67 D 1/04 B 67 D 1/08 B 65 D 77/06
Y	---	3-6	
Y	US-A-3 527 391 (A.G. DI MURIA) * Claim 1; figure 3 *	3,4	
Y	GB-A-1 225 625 (GRUNDY LTD) * Page 1, lines 52-78; figure 1 *	5	
Y	EP-A-0 276 097 (SPICERITE LTD) * Column 5, lines 21-23; figure 1 *	6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 67 D B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 21-05-1990	Examiner VAN DEN BOSSCHE E.J.N.
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